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PRE-PERMIT CONSTRUCTION APPROVAL AND PERMIT TO CONSTRUCT APPLICATION for CARGILL ENVIRONMENTAL FINANCE, BETTENCOURT B-6 DAIRY JEROME, IDAHO

August 18, 2008

Kleinfelder Project Number: 95544

Prepared for:

CARGILL ENVIRONMENTAL FINANCE
Mail Stop 139 12700 Whitewater Dr.
Minnetonka, Minnesota 55343

PRE-PERMIT CONSTRUCTION APPROVAL AND PERMIT TO CONSTRUCT APPLICATION for CARGILL ENVIRONMENTAL FINANCE, BETTENCOURT B-6 DAIRY
3350 South 2400 East
Jerome, Idaho 83338

Kleinfelder Job No: 95544

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August 18, 2008

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1 PROCESS DESCRIPTION

Cargill Environmental Finance proposes to construct an anaerobic digester renewable energy system on property leased from the Bettencourt B-6 Dairy. The site is located approximately five miles west of Jerome, Idaho and presented in Figures 1 through 3. The facility is within Gooding County, Idaho which is designated attainment or unclassifiable for criteria pollutants.

1.1. Process Description

Manure from the dairy will be pumped into an anaerobic digester where the natural digestion process will produce methane rich bio-gas. The hydrogen sulfide content of the bio-gas will be reduced using a bio-scrubber conditioning system. The conditioned bio-gas will fuel two Genset reciprocating internal combustion engines. The Genset generators will produce electricity that will be sold to the local utility. Heat produced from the Genset electrical generators will be used to maintain the digester at an optimum operating temperature and as process heat for the dairy. The waste liquid in post digester manure is separated and will be utilized for irrigation and fertilizer. The solids will be used for cattle bedding and/or a soil amendment. A process flow diagram is presented in Figure 4.

The proposed project includes the installation of the manure digester, bio-gas conditioning system and Genset generators. The Bettencourt B-6 Dairy will operate the dairy and manage the solids and wastewater generated by the process. This permit application is being submitted to obtain approval for construction and operation of the proposed project. Air emissions from the system are released through the two stacks associated with the Genset generators and an emergency flare that would be used in the event the generators are taken offline.

The proposed anaerobic digester renewable energy system will be operated by Cargill Environmental Finance on property leased from the Bettencourt B-6 Dairy. The generators and the flare emissions will result in criteria pollutant emissions of carbon monoxide, particulate matter, nitrogen oxides, sulfur dioxide and volatile organic compounds. The generators will also emit toxic air pollutants (TAPs).

1.2. Facility Classifications

SIC: 4911
The facility is classified by the Standard Industrial Classification # 4911 for Electric Services.

NAICS: 237130
The facility is classified by the North American Industry Classification System # 237130 for Alternative Energy Structure Construction.

2 PRE PERMIT CONSTRUCTION ELIGIBILITY

Pre-permit construction approval is available for new minor sources that do not use emissions netting to stay below major source levels. The proposed project meets all of the pre-permit construction eligibility requirements. The emission calculations and data source reference information are provided in this application.

Cargill Environmental Finance is requesting from IDEQ the ability to commence construction of the source before receiving the required permit to construct. The owner understands that proceeding with construction prior to receiving the required permit to construct is at their own risk. This request is presented in the cover letter for this application.

The pre-permit construction process requires a meeting with DEQ representatives before submitting the pre-permit construction permit. Kleinfelder representatives met with Kevin Schilling, Bill Rogers and Morrie Lewis of IDEQ on April 25, 2008 to discuss the project and pre-permit application.

An informational meeting was held at the Jerome Public Library in the Side B Conference room on April 8, 2008. The meeting announcement was published in the Times News which is a newspaper with general circulation in the Gooding County, Idaho. A copy of the notices published in the Times News is presented in Appendix E.

A pre-permit construction approval application for the project was submitted to IDEQ for the proposed project on March 26, 2008. The application was withdrawn to modify the application to reflect process design changes. Cargill Environmental Finance and Kleinfelder met with IDEQ on July 30, 2008 to discuss the changes, which include:

- A change in the vendor of the genset reciprocating engines from Gauscor to General Electric. This change does not substantially change the emissions from the project.
- The installation of a bio-gas conditioning system to reduce H_2S concentrations in the bio-gas. The system is being installed to lower maintenance on the genset engines; however its installation will result in reductions of SO_2 emissions from the project.

A second informational meeting has been scheduled at the Jerome Public Library in the Conference Room on August 20, 2008. Cargill will present the proposed changes to the project to those in attendance.

3 APPLICABLE REQUIREMENTS

3.1. Major or Minor Facility Designation

The proposed project is considered a minor facility based on it's potential to emit. Please see detailed emission calculations in Appendix D.

Designated: ____Yes ___✓__ No
Potential To Emit: 91.1 tons/yr
Pollutant which defines Potential to Emit: Carbon Monoxide

3.2. Federal Requirements

No federal regulations other than NSPS SubPart JJJJ (40 CFR 60) are applicable to the proposed project.

The engines will be manufactured after June 1, 2008 and have a capacity greater than 500 hp but less than 1,350 hp and construction of the project will commence after June 12, 2006. Therefore, in accordance with 40 CFR 60.2430, 40 CFR 60, Subpart JJJJ is applicable to this project.

The following NSPS emission standards are applicable to the proposed generators

Table 3-1
Summary of 40 CFR 60, Subpart JJJJ Table 1.

Engine Type and Fuel	Maximum engine power	Manufacturer Date	Emission standards[a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_x	CO	VOC[b]	NO_x	CO	VOC[b]
Digester Gas (except lean burn 500≥HP<1,350)	HP≥500	7/1/2007	3.0	5.0	1.0	220	610	80
Digester Gas Lean Burn	500≥HP<1,350	1/1/2008	3.0	5.0	1.0	220	610	80

[a] Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15% O_2.
[b] For the purposes of this subpart, when calculating emissions of volatile organic compounds (VOC), emission of formaldehyde should not be included.

The requirements of 40 CFR 60.4233(f) are applicable to this project. A maintenance plan and records of conducted maintenance will be prepared and available at the site. An initial performance test will be conducted in accordance with the NSPS requirements and subsequent performance testing conducted every 8,760 hours of operation or 3-years which ever comes first. Performance testing will be completed in accordance with the procedures in 40 CFR 60, Subpart JJJJ, Table 2.

40CFR 60.4243(g) does not apply to this application. The engines do not require three-way catalysts /non-selective catalytic reduction to meet the emission standards because they are lean burn engines and not rich burning engines. EPA's interpretation of the applicability of this requirement for these type of engines is included in Appendix F.

Notifications will be made in accordance with the NSPS general provisions and Section 60.4245 of 40 CFR 60, Subpart JJJJ.

3.3. Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01)

IDAPA 58.01.01.123 Certification of Documents
Based on information and belief formed after reasonable inquiry, all statements and information contained in the application are true, accurate, and complete.

IDAPA 58.01.01.128 Confidential Information
The information submitted in the application is subject to public disclosure unless submitted under a secret trade claim.

IDAPA 58.01.01.130 Startup Shutdown, Scheduled Maintenance, Safety Measures, upset and Breakdown
If an excess emission event occurs during startup shutdown, scheduled maintenance, safety measures, upset or breakdown, Cargill Environmental Finance will comply with IDAPA 58.01.01.130 through IDAPA 58.01.01.136.

IDAPA 58.01.01.156 Total Compliance
Cargill Environmental Finance understands that when more than one section of rules applies then all such rules must be met to be considered in compliance.

IDAPA 58.01.01.201 Permit to Construct Required
Cargill Environmental Finance's will obtain a permit to construct from the Department which satisfies the requirements of Sections 200 through 208. The proposed project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules.

IDAPA 58.01.01.203 Permit Requirements for New and Modified Stationary Sources
This permit application demonstrates that the project will comply with all applicable emissions standards, ambient air quality standards, and toxic increments.

IDAPA 58.01.01.210 Demonstration of Preconstruction Compliance with Toxic Standards
This permit application demonstrates preconstruction compliance with the Toxic Standards. See the ambient impacts assessment in Section 5.

IDAPA 58.01.01.223 Exemption Criteria, Recordkeeping, and Reporting for Toxic Air Pollutant Emissions
The proposed project does not meet the exemption criteria specified in sections 01 through 04 of Section 223.

IDAPA 58.01.01.300 Procedures and Requirements of Tier I operating Permits
The facility is not considered a major source and not subject to these requirements.

IDAPA 58.01.01.577 Ambient Air Quality Standards for Specific Air Pollutants
The proposed project meets the ambient air quality standards specified in Section 577. See the ambient impacts assessment in Section 5.

IDAPA 58.01.01.578 Designation of Attainment, Unclassifiable, and Nonattainment Areas
The proposed project is located in Gooding County which is currently classified as unclassifiable or attainment for criteria pollutants. Cargill Environmental Finance acknowledges that DEQ annually reviews areas for classification.

IDAPA 58.01.01.585 Toxic Air Pollutants Non-Carcinogenic Increments
The proposed project will result in emissions of non-carcinogenic toxic air pollutants including acrolein, isomers of xylene, selenium, styrene, toluene, and trichloroethylene. These emissions will not exceed their respective screening emission levels. See the ambient impacts assessment in Section 5.

IDAPA 58.01.01.586 Toxic Air Pollutants Carcinogenic Increments
The proposed project will result in potential emissions of carcinogenic toxic air pollutants including acetaldehyde, benzene, dichloromethane, formaldehyde, dichloroethylene, nickel and vinyl chloride. The emissions of acetaldehyde and trichloroethylene do not exceed their respective screening emission levels, however emissions for benzene, dichloromethane, formaldehyde, nickel and vinyl chloride have potential to exceed each of their respective screening emission levels. Modeling results indicate all emissions for carcinogenic toxic air pollutants are below their respective AACCs. See the ambient impacts assessment in Section 5.

IDAPA 58.01.01.590 New Source Performance Standards
Cargill Environmental Finance acknowledges that the proposed project must comply with the NSPS set forth in 40 CFR Part 60.

IDAPA 58.01.01.591 National Emission Standards for Hazardous Air Pollutants
The proposed project complies with 40 CFR Part 61 and 40 CFR Part 63.

IDAPA 58.01.01.625 Visible Emissions
Cargill Environmental Finance will not discharge any air pollutant which is greater than 20% opacity from the stacks for more than 3 minutes in a 60 minute period. Cargill will comply with specified test methods and procedures.

IDAPA 58.01.01.650 & 651 Rules for the Control of Fugitive Emissions & General Rules
Cargill Environmental Finance will take all reasonable precautions to prevent particulate matter from becoming airborne.

IDAPA 58.01.01.675 & 676 Fuel Burning Equipment – Particulate Matter & Standards for New Sources

The project will not discharge particulate above the applicable grain loading standard.

IDAPA 58.01.01.700--702 Particulate Matter – Process Weight Limitations

The emitting source is not considered process equipment and therefore the regulations do not apply to this source.

IDAPA 58.01.01.760 Rules for the Control of Ammonia from Dairy Farms

The proposed project is located on property leased from the Bettencourt B-6 dairy. The impact analysis for the emissions from the proposed generators demonstrates compliance with applicable standards at the boundary of the leased property. The dairy is owned operated separately from the generators. Therefore these rules do not apply to this source.

IDAPA 58.01.01.775 Rules for the Control of Odors

All reasonable precautions will be taken to control odors.

4 POTENTIAL EMISSION ESTIMATES

4.1. Equipment and Source Description

Two Genset electrical generators are proposed to be installed adjacent to each other. The two generators are described in Table 4-1. There are no emission controls proposed for the generators.

Table 4-1

Equipment Description

Equipment / Source Description	Emission Controls
Anaerobic Digester, Electric Generators, & Flare **Anaerobic Digester** Biogas Production: 825,500 c.f. per day	Internal combustion engines and flare reduce emissions from the project
Bio-gas Conditioning System Manufacturer: Paques Model: Thiopaq Type: Bioscrubber	The biogas conditioning system reduces SO_2 emissions from the project
Generator Engine No. 1 Manufacturer: GE Model: Jenbacher J416 Rated Power: 1,573 horsepower Ignition Type: Spark **Generator Engine No. 2** Manufacturer: GE Model: Jenbacher J416 Rated Power: 1,573 horsepower Ignition Type: Spark **Flare** Manufacturer: Perennial Energy Flare Heat Release Rate: 1,360,355 cal/sec	None

4.2. Source Parameters

Each of the generators will have a 12-inch diameter stack extending 22 feet above the ground surface. The vendor estimated, based on the design parameters and modeling the operation of the units, that the typical stack temperatures and velocity will be 743° K and 19.18 meters/second, respectively.

The flare will be manufactured by Perennial Energy and will be capable of combusting all of the gas produced from the digester. The flare is 20 feet above ground surface and will operate when the engines are offline due to an emergency situation or maintenance.

4.3. Emission Factors

The emission factors used to estimate emissions from the generators came from multiple sources including AP-42, EPA's WebFire database and vendor information. The specific vendor information was determined most reliable, since it represents the specific operating conditions and equipment proposed for the project.

AP-42 Section 3.1 has published emission factor data for POTW digester gas-fired stationary gas turbines. In addition, AP-42 Section 3.2 has published emission factors for natural gas fired reciprocating engines. EPA's WebFire database provides limited data from internal combustion engines fueled from POTW digester gas. The WebFire data was collected in the early 1990s and is rated U (unrated)[1] by EPA. It does not provide supporting details about the source and operating conditions.

With the exception of particulate and SO_2, vendor information was used to estimate emissions for all of the primary pollutants. Vendor information for this type of emission source is limited. Cargill Environmental Finance discussed with IDEQ during its July 30, 2008 meeting that the vendor data is an estimate that may need to be refined after the performance source test data for CO, NOx and VOC's is obtained. For example, vendor information for VOC emissions is based on tests conducted using EPA Method 18 data. The NSPS performance testing will be conducted using EPA Method 25A.

The PM_{10} and $PM_{2.5}$ emission factors were selected from from AP-42 Section 3.2, Table 3.2 – Uncontrolled Emission Factors for 4-stroke Lean –Burn Engines. The table presents D-Rated PM-10 (filterable) and PM Condensible emission factors for natural gas lean burn reciprocating engines. The PM-10 emissions represent the sum of the PM-10 (filterable) and the PM Condensable fractions, since the condensable fraction is likely less than 10 microns.

SO_2 emission factors were calculated from the anticipated average concentration of H_2S in the raw and conditioned bio-gas. The H_2S will be oxidized to SO_2 in either the engines or the flare. The H_2S concentration in the raw bio-gas is anticipated to average approximately 2,400 ppm. This concentration is consistent to similar systems. The bio-gas conditioning system is expected to reduce bio-gas concentrations to 350 ppm. Since the design of the operation allows the conditioning system to be bypassed, the flare SO_2 emission factor was calculated based on the 2,400 ppm H_2S concentration. Only conditioned bio-gas will be combusted in the genset engines to avoid equipment

[1] *Emission factor is developed from source tests which have not been thoroughly evaluated, research papers, modeling data, or other sources that may lack supporting documentation. The data are not necessarily "poor," but there is not enough information to rate the factors according to the rating protocol. "U" ratings are commonly found in L&E documents and FIRE rather than in AP 42.*

damage, therefore the emission factor for the engines is based on the 350 ppm H_2S concentration.

TAP emission data from generators using digester gas fuel is likely more representative than data from generators using natural gas fuel. AP-42 Section 3.2, Table 3.1-7 Emission Factors for Hazardous Air Pollutants from Digester Gas-Fired Stationary Gas Turbines presents D-Rated uncontrolled emission factors acetaldehyde, formaldehyde, nickel and selenium. Other HAPs are presented in the data, but reported as nondetectible. The remaining emission factors were extracted from the EPA WebFire database. This data was identified as the least reliable of the available data. It is unrated by EPA and provides no supporting information to evaluate its relevance to the proposed project.

AP-42 Section 13.5 has published emission factor data for industrial flares. The emission factors presented in this section of AP-42 were developed from petroleum refinery flare emissions and are not representative of a manure digester system. AP-42 Section 2.4 has published emission factors for municipal waste gas flares. However, these were also considered not be representative of a manure digester system.

A search of EPA's RACT/BACT/LAER Clearinghouse database (RBLC) revealed a permit that was issued in 2007 for an anaerobic digester at an Archer Daniels Midland facility in Iowa. The database presents criteria pollutant emission factors for the digester flares that represent Best Available Control Technology (RBLC ID #IA-0088). The emission factors are similar to those proposed for the generators.

The revised emission factors for the flare are those identified in EPA's RBLC. The emission factors for hazardous air pollutants (HAPs) were assumed the same as the emission factors used to estimate the generator emissions.

4.4. Emission Estimate

The hourly emission rates were calculated by multiplying the expected hourly BTU input by the respective emission factor. The BTU input was determined based on the bio-gas flow rate multiplied by the expected BTU value of 565 Btu/cf for the bio-gas. The maximum daily bio-gas production is estimated to be 825,500 cf/day. The hourly rate was estimated by dividing the maximum daily flow by 24 hours.

There is potential for the facility to bypass the bio-gas conditioning system if necessary for maintenance or in the event of malfunction. If the system is bypassed, bio-gas with higher concentration H_2S would be flared, resulting in higher emissions of SO_2 than when the conditioning system is operating as designed. The emission estimate presented in Table 4-2 reflects hourly emissions of SO_2 from the flare when it is combusting the un-conditioned bio-gas.

The generators will emit acrolein, isomers of xylene, styrene, toluene, selenium and trichloroethylene which are non-carcinogenic toxic air pollutants (TAPs) listed in IDAPA 58.01.01.585. The emission estimates for these compounds do not exceed their

respective TAP screening emission levels (EL). The generators will also emit acetaldehyde, benzene, dichloromethane, formaldehyde, trichloroethylene, nickel and vinyl chloride which are carcinogenic TAPs listed in IDAPA 58.01.01.586. The emission estimates for acetaldehyde and trichloroethylene do not exceed their respective TAP EL. However, modeling was conducted for benzene, dichloromethane, formaldehyde, nickel, and vinyl chloride because emission estimates did exceed their respective TAP EL. Modeling demonstrates compliance with the Acceptable Ambient Concentration (AAC).

Table 4-2

Hourly Emission Estimate for Genset Generators and Flare

Pollutant	Genset (lbs/hr)	Flare (lbs/hr)
PM_{10}	0.19	0.15
SO_2 (Note 1)	2.03	13.94
NO_x	7.63	1.94
CO	20.81	3.89
VOC	1.73	7.00
Acetaldehyde	1.0E-03	1.0E-03
Acrolein	5.1E-04	5.1E-04
Benzene	1.3E-02	1.3E-02
Dichloromethane	2.0E-03	2.0E-03
Formaldehyde	3.7E-03	3.7E-03
Isomers of Xylene	2.7E-03	2.7E-03
Nickel	3.9E-05	3.9E-05
Selenium	2.1E-04	2.1E-04
Styrene	1.0E-03	1.0E-03
Toluene	5.1E-03	5.1E-03
Trichloroethylene	3.9E-04	3.9E-04
Vinyl Chloride	1.1E-03	1.1E-03

Note 1: Hourly SO_2 emissions from the flare were calculated based on the anticipated average raw bio-gas concentration.

4.5. Potential to Emit

The potential to emit if all of the generators are operating at maximum capacity for the proposed project is shown in Table 4-3. Please see Appendix D for detailed emission calculations.

The potential to emit was calculated based on the genset engines operating 8,760 hours/year. Table 4-3 presents the potential emissions if the maximum expected annual biogas flow were combusted through either of the generators and if the maximum expected annual biogas flow were combusted through the flare. The flare is

located after the H_2S scrubbing system, but its potential emissions reflect the concentration of H_2S in the raw digester gas as a worst case scenario. No limitation on the operation of the flare will be necessary to maintain the PTE of any criteria pollutant below major source thresholds.

Table 4-3

Potential Annual Emissions for Genset Generators and Flare

Pollutant	Genset PTE (Note 1) (tons/yr)	Flare PTE (Note 2) (tons/yr)
PM_{10}	0.9	0.6
SO_2 (Note 3)	8.9	61.1
NO_x	33.4	8.5
CO	91.1	17.0
VOC	7.6	30.6
Acetaldehyde	4.5E-3	4.5E-3
Acrolein	2.2E-3	2.2E-3
Benzene	5.9E-2	5.9E-2
Dichloromethane	8.6E-3	8.6E-3
Formaldehyde	1.6E-2	1.6E-2
Isomers of Xylene	1.2E-2	1.2E-2
Nickel	1.7E-4	1.7E-4
Selenium	9.4E-4	9.4E-4
Styrene	4.5E-3	4.5E-3
Toluene	2.2E-2	2.2E-2
Trichloroethylene	1.7E-3	1.7E-3
Vinyl Chloride	4.8E-3	4.8E-3

Note 1: PTE is calculated based on 8,760 hours/year of Genset engine operation.
Note 2: PTE is calculated based on 8,760 hours/year of flare operation.
Note 3: SO_2 PTE from the flare is calculated using raw un-conditioned biogas.

4.6. Emission Limits

The concentration of the Hydrogen Sulfide (H_2S) entering the generators will be maintained below 350 ppm. As discussed during the pre-permit meeting with DEQ, Cargill Environmental Finance prefers mass based emission limits instead of concentration based limits in its permit. Cargill is committed to:

- Monitor H2S concentration between the bio-gas conditioning system and Gensets

- Monitor bio-gas flowrate through the system.

The emission factors for the primary pollutants are estimates based on the best available information. Cargill will conduct performance source testing according to New Source Performance Standards. The testing will provide site specific information that will increase the understanding of emissions form the source. Cargill requests flexibility in its permit to allow revision of emissions estimates, as appropriate, when site specific information is collected.

5 AMBIENT IMPACT ASSESSMENTS

Air quality modeling was conducted consistent with the Idaho Department of Environmental Quality (IDEQ) Dispersion Modeling Guidelines (Guidelines), revised December 31, 2002, and the Ambient Air Quality Modeling Protocol for this project submitted to IDEQ and approved February 29, 2008.

Slight deviations were made after the approval of the Air Quality Modeling Protocol. Because the proposed project on Bettencourt B-6 Dairy is considered to be a source separate from the dairy, the leased property boundary is considered to be the nearest public receptor. The closest boundary is approximately 70 feet (21.3 m) from the source. However, we selected the maximum modeled concentration generated by the model to demonstrate compliance with National Ambient Air Quality Standards (NAAQS). The Genset generators and the flare were modeled independently assessing the impact at the maximum impact which occurred outside the anticipated lease boundary for the site.

The stack velocity changed to 19.18 m/sec because of the change in manufacturer of the Gensets. The stack height was increased from 20 feet to 22 feet (6.7 m). The Screen3 outputs files are attached in Appendix D.

The table below shows the modeled results of the ambient air impacts from the Genset generators and the flare. The modeled impacts from criteria pollutants are compared to NAAQS. The modeled impacts from TAPs are compared to State of Idaho AACs.

Based on the analysis performed, the proposed stationary source will not cause or significantly contribute to a violation of any ambient air quality standard and demonstrates pre-construction compliance with IDAPA 58.01.01, Section 161 with regards to TAP emissions.

Table 5-1
Modeling Results

Pollutant	Averaging period	Modeled Ambient Concentrations (µg/m3)		NAAQS/AAC (µg/m3)
		Gensets Engines	Flare	
PM10	24-hr	78	74	150
	Annual	27	26	50
SO2	3-hr	159	162	1,300
	24-hr	82	83	365
	Annual	19	19	80
NO2	Annual	48	19	100
CO	1-hr	5,023	3,640	40,000
	8-hr	3,296	2,328	10,000
Pb	Qtrly	n/a	n/a	1.5
Acetaldehyde	Annual	Below TAP EL	Below TAP EL	n/a
Acrolein	24-hr	Below TAP EL	Below TAP EL	n/a
Benzene	Annual	0.11	0.02	0.12
Dichloromethane	Annual	0.02	0.002	0.24
Formaldehyde	Annual	0.03	0.005	0.077
Isomers of Xylene	24-hr	Below TAP EL	Below TAP EL	n/a
Nickel	Annual	0.0003	0.00005	0.004
Selenium	24-hr	Below TAP EL	Below TAP EL	n/a
Styrene	24-hr	Below TAP EL	Below TAP EL	n/a
Toluene	24-hr	Below TAP EL	Below TAP EL	n/a
Trichloroethylene	24-hr	Below TAP EL	Below TAP EL	n/a
	Annual	Below TAP EL	Below TAP EL	n/a
Vinyl Chloride	Annual	0.01	0.001	0.14

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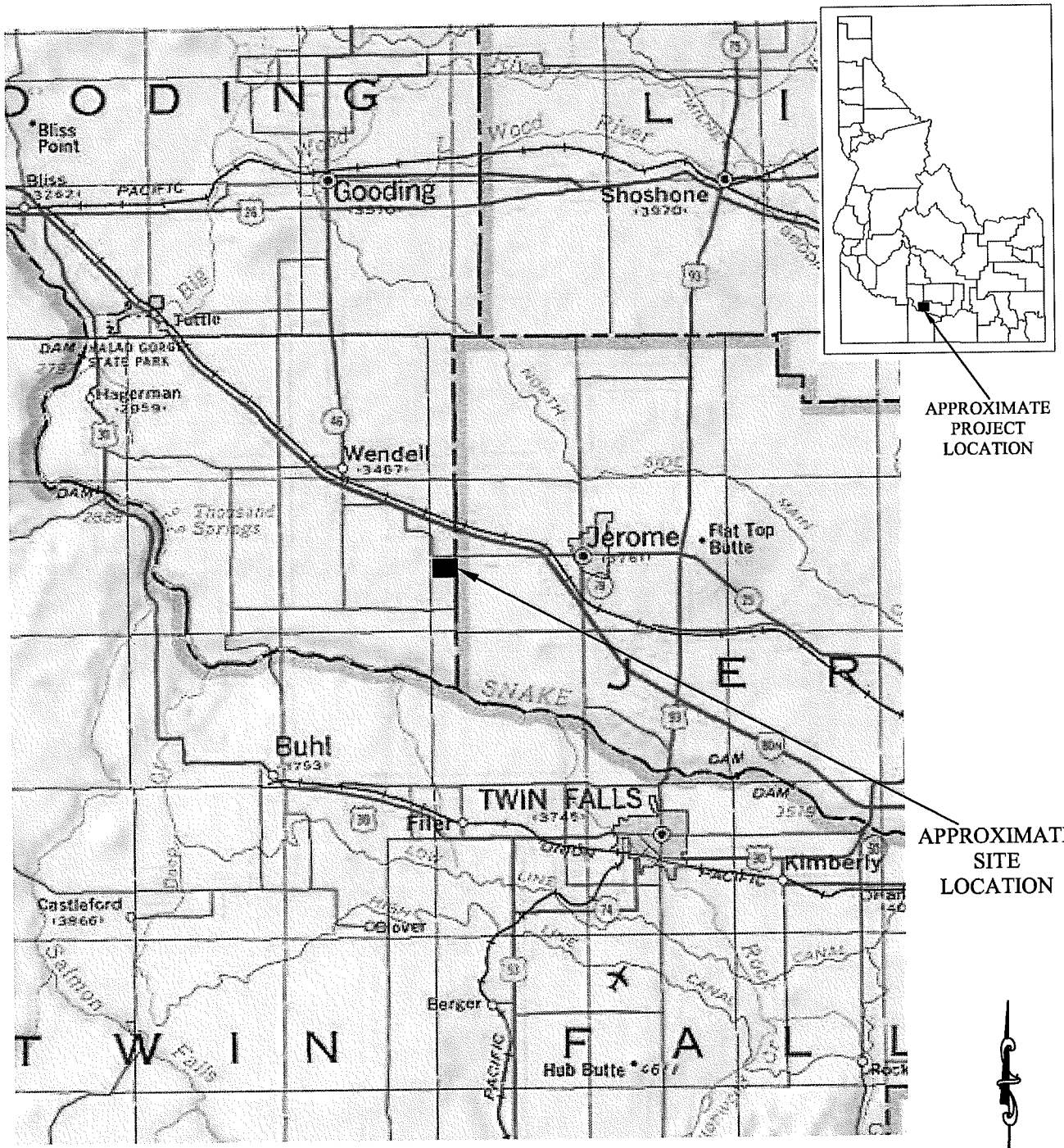
FIGURES



SOURCE: TOPO! © 2000 National Geographic Holdings

6 0 6

Scale in Miles

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PROJECT NO.	95544
DRAWN:	JULY 2008
DRAWN BY:	CE
CHECKED BY:	KW
FILE NAME:	

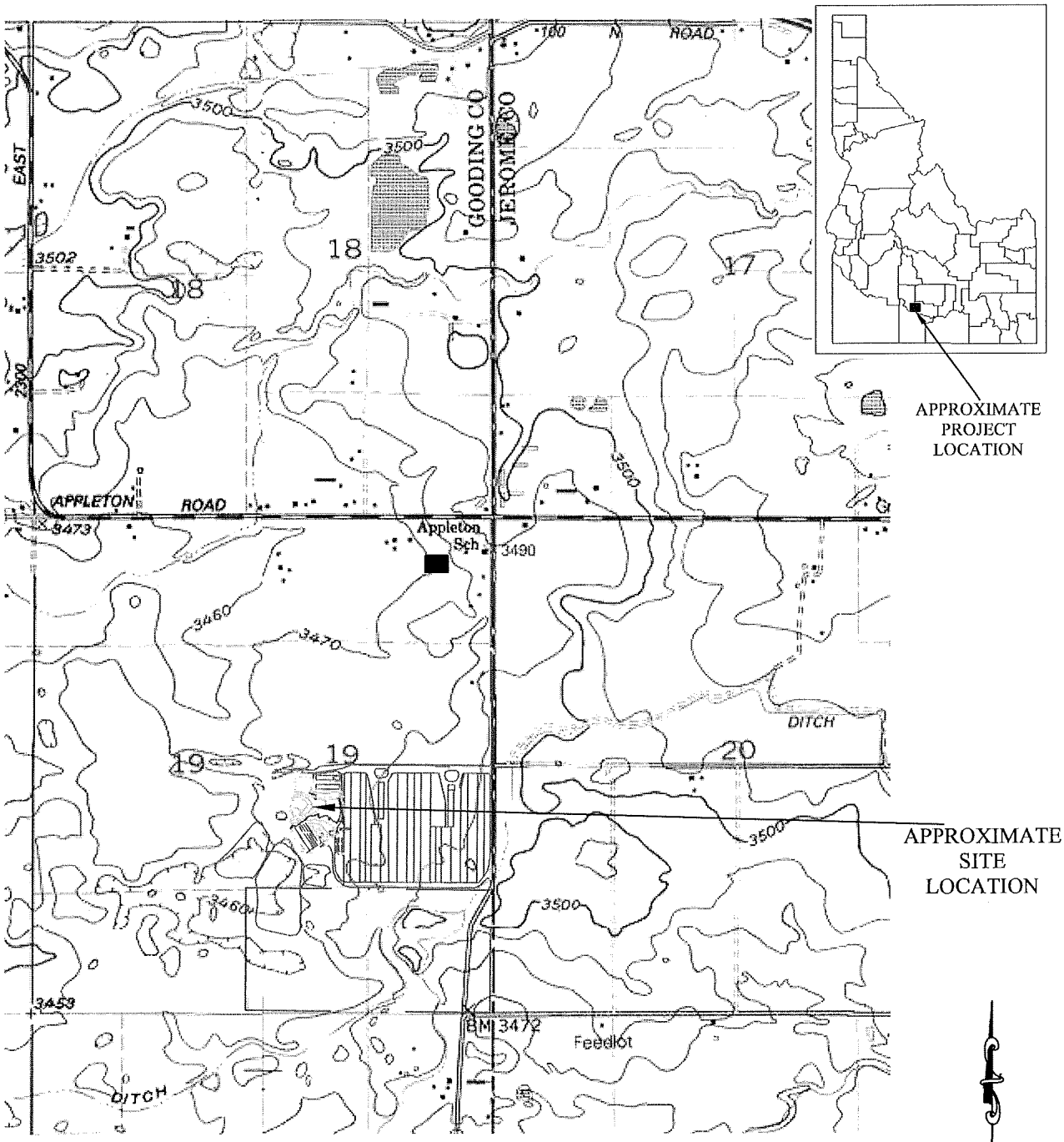
VICINITY MAP

CARGILL BETTENCOURT B6

3350 S. 2400 E.
JEROME, IDAHO

FIGURE

1



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Scale in Miles

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PROJECT NO.	95544
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FILE NAME:	

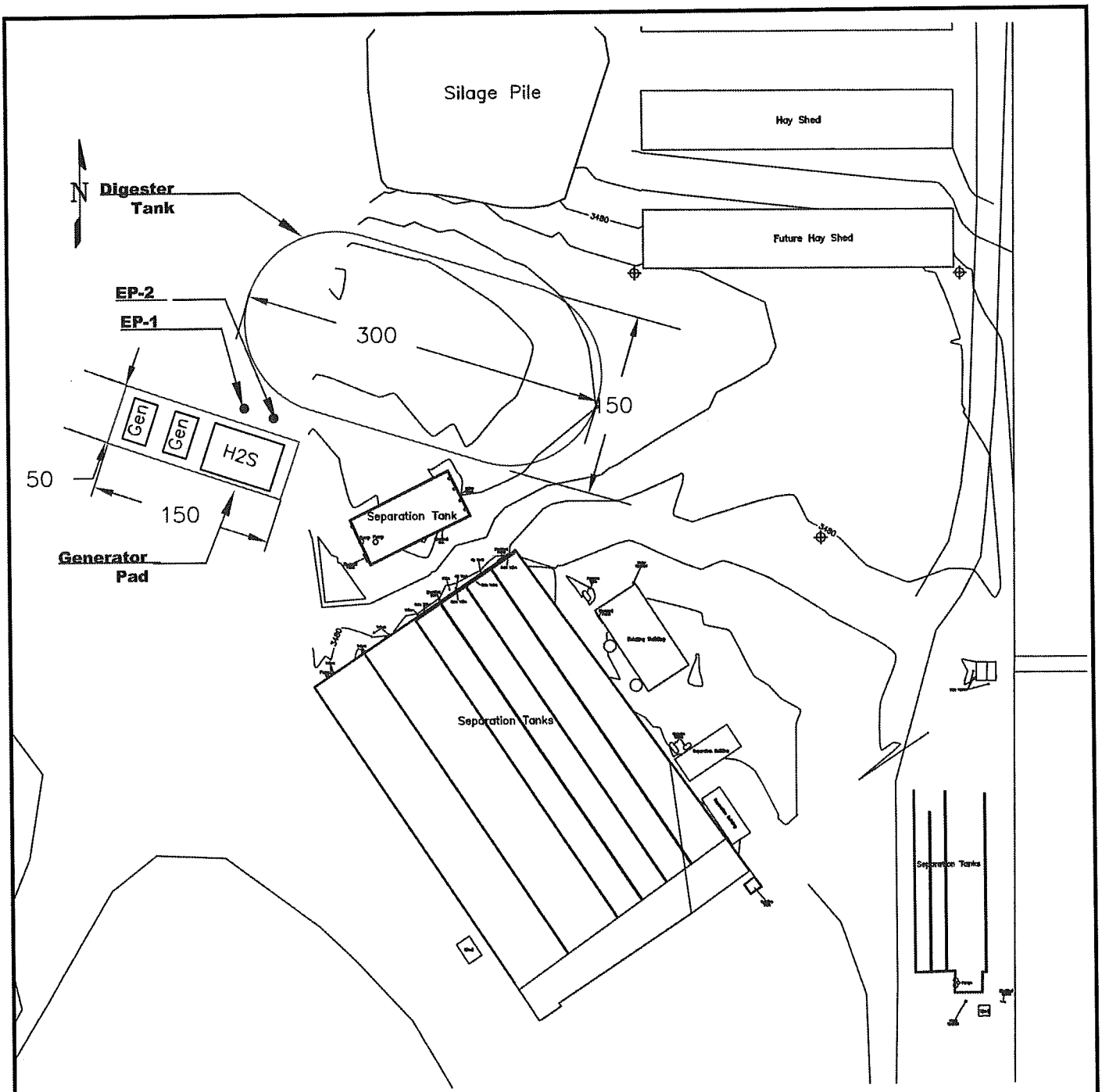
SITE LOCATION

CARGILL BETTENCOURT B6

3350 S. 2300 E.
JEROME, IDAHO

FIGURE

2



Facility Drawing Provided by Dioptra Geomatics, July 2008

150 0 150

Scale in Feet

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BOISE, ID

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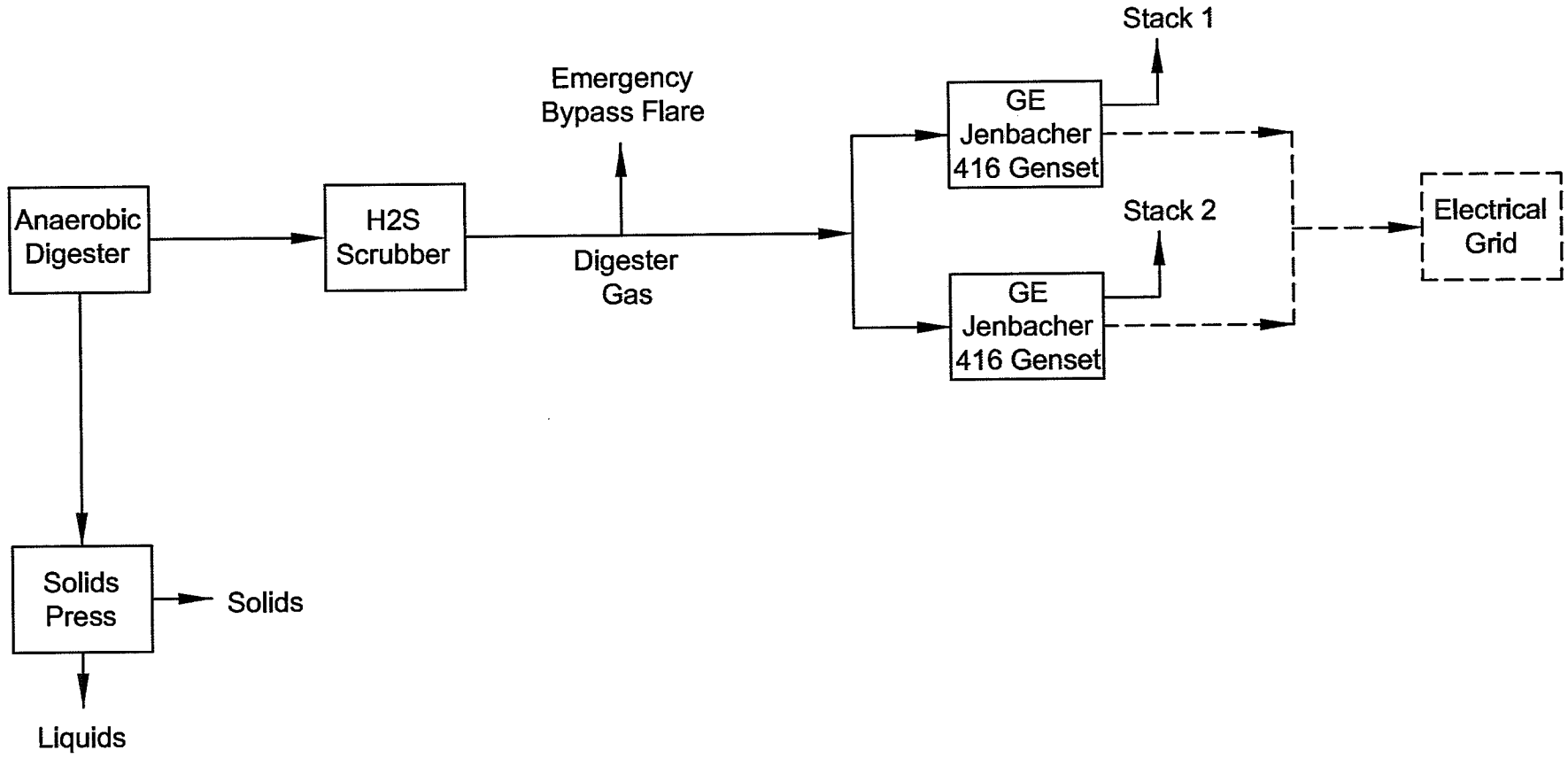
BORING AND GEOPHYSICAL LINE LOCATIONS

CARGILL BETTENCOURT B6

3350 S. 2300 E.
JEROME, IDAHO

FIGURE

3



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DRAWN BY:	CE
CHECKED BY:	KW
FILE NAME:	

PROCESS FLOW DIAGRAM

Cargill Bettencourt B6 Digester
3350 S. 2400 E.
Jerome, Idaho

FIGURE
4

KLEINFELDER
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APPENDIX A

Permit to Construct Application Forms

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
04/03/07

Please see instructions on page 2 before filling out the form.

DEQ USE ONLY
Date Received
Project Number
Payment / Fees Included? Yes ☐ No ☐
Check Number

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER

1. Company Name	Cargill Environmental Finance		
2. Facility Name	Bettencourt - B6	3. Facility ID No.	1
4. Brief Project Description - One sentence or less	Dairy Anaerobic Digester which captures biogas to produce electricity through gensets.		

PERMIT APPLICATION TYPE

5. ☒ New Facility ☐ New Source at Existing Facility ☐ Unpermitted Existing Source
☐ Modify Existing Source: Permit No.:_____ Date Issued:_____
☐ Required by Enforcement Action: Case No.:_____

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms	DEQ Verify
☒	☐	Form GI – Facility Information	☐
☐	☒	Form EU0 – Emissions Units General	☐
☒	☐	Form EU1 - Industrial Engine Information Please Specify number of forms attached: _____	☐
☐	☒	Form EU2 - Nonmetallic Mineral Processing Plants Please Specify number of forms attached: _____	☐
☐	☒	Form EU3 - Spray Paint Booth Information Please Specify number of forms attached: _____	☐
☐	☒	Form EU4 - Cooling Tower Information Please Specify number of forms attached: _____	☐
☐	☒	Form EU5 – Boiler Information Please Specify number of forms attached: _____	☐
☐	☒	Form HMAP – Hot Mix Asphalt Plant Please Specify number of forms attached: _____	☐
☐	☒	Form CBP - Concrete Batch Plant Please Specify number of forms attached: _____	☐
☐	☒	Form BCE - Baghouses Control Equipment	☐
☒	☐	Form SCE - Scrubbers Control Equipment	☐
☒	☐	Forms EI-CP1 - EI-CP4 - Emissions Inventory– criteria pollutants (Excel workbook, all 4 worksheets)	☐
☒	☐	PP – Plot Plan	☐
☒	☐	Forms MI1 – MI4 – Modeling (Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability	☐

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All information is required. If information is missing, the application will not be processed.

IDENTIFICATION

1. Company Name	Cargill Environmental Finance
2. Facility Name (if different than #1)	Bettencourt B-6
3. Facility I.D. No.	1
4. Brief Project Description:	Dairy Anaerobic Digester which captures biogas to produce electricity through gensets

FACILITY INFORMATION

5. Owned/operated by: (√if applicable)	☐ Federal government ☐ County government ☐ State government ☐ City government
6. Primary Facility Permit Contact Person/Title	Ryan Coleman - Project Engineer
7. Telephone Number and Email Address	208-345-2324 or/cell 208-340-6421 ryan_coleman@cargill.com
8. Alternate Facility Contact Person/Title	Gary Rimmey Senior Operations and Maintenance Manager
9. Telephone Number and Email Address	984-952-3887 gary_rimmey@cargill.com
10. Address to which permit should be sent	Mail stop 139 12700 Whitewater Dr. (AND) 1410 Camel Back Ln Suite 229
11. City/State/Zip	Minnetonka, Minnesota 55343 Boise, ID 83702
12. Equipment Location Address (if different than #10)	Bettencourt B-6 Dairy
13. City/State/Zip	3350 S. 2400 E. Jerome Idaho 83338
14. Is the Equipment Portable?	☐ Yes ☒ No
15. SIC Code(s) and NAISC Code	Primary SIC: 4911 Secondary SIC (if any): NAICS: 237130
16. Brief Business Description and Principal Product	Anaerobically digest cow manure and capture methane to power engine and produce electricity.
17. Identify any adjacent or contiguous facility that this company owns and/or operates	

PERMIT APPLICATION TYPE

18. Specify Reason for Application	☒ New Facility ☐ New Source at Existing Facility ☐ Unpermitted Existing Source ☐ Modify Existing Source: Permit No.:_____ Date Issued: _____ ☐ Permit Revision ☐ Required by Enforcement Action: Case No.:_____

CERTIFICATION

IN ACCORDANCE WITH **IDAPA 58.01.01.123** (RULES FOR THE CONTROL OF AIR POLLUTION IN IDAHO), I CERTIFY BASED ON INFORMATION AND BELIEF FORMED AFTER REASONABLE INQUIRY, THE STATEMENTS AND INFORMATION IN THE DOCUMENT ARE TRUE, ACCURATE, AND COMPLETE.

19. Responsible Official's Name/Title	Ryan Coleman - Project Engineer	
20. RESPONSIBLE OFFICIAL SIGNATURE		Date:

21. ☒ Check here to indicate you would like to review a draft permit prior to final issuance.

Emissions Unit - General **Form EU0**

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PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/27/07

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IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
Cargill Environmental Finance	Bettencourt B-6	1
Brief Project Description:	Dairy Anaerobic Digester that collects biogas & makes electricity	

EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION

1. Emissions Unit (EU) Name:	FLARE
2. EU ID Number:	EP-3
3. EU Type:	☒ New Source ☐ Unpermitted Existing Source ☐ Modification to a Permitted Source -- Previous Permit #: Date Issued:
4. Manufacturer:	PERENNIAL ENERGY
5. Model:	ENCLOSED GROUND FLARE
6. Maximum Capacity:	825,500 cf/day
7. Date of Construction:	9/1/2008
8. Date of Modification (if any)	NA
9. Is this a Controlled Emission Unit?	☒ No ☐ Yes If Yes, complete the following section. If No, go to line 18.

EMISSIONS CONTROL EQUIPMENT

10. Control Equipment Name and ID:	NA		
11. Date of Installation:	NA	12. Date of Modification (if any):	NA
13. Manufacturer and Model Number:	NA		
14. ID(s) of Emission Unit Controlled:	NA		
15. Is operating schedule different than emission units(s) involved?	☐ Yes ☐ No		
16. Does the manufacturer guarantee the control efficiency of the control equipment?	☐ Yes ☐ No (If Yes, attach and label manufacturer guarantee)		

	Pollutant Controlled					
	PM	PM10	SO_2	NOx	VOC	CO
Control Efficiency	NA	NA	NA	NA	NA	NA

17. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency. NA

EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)

18. Actual Operation	IN AN EMERGENCY OR MAINTENANCE SITUATION
19. Maximum Operation	EMISSION ESTIMATE IS BASED ON 8,760 HOURS/YEAR

REQUESTED LIMITS

20. Are you requesting any permit limits?	☐ Yes ☒ No (If Yes, check all that apply below)
☐ Operation Hour Limit(s):	
☐ Production Limit(s):	
☐ Material Usage Limit(s):	
☐ Limits Based on Stack Testing	Please attach all relevant stack testing summary reports
☐ Other:	
21. Rationale for Requesting the Limit(s):	NA

Emissions Units - Industrial Engine Information **Form EU1**

PERMIT TO CONSTRUCT APPLICATION

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03/27/07

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IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
Cargill Environmental Finance	Bettencourt B-6	1
Brief Project Description:	Dairy Anaerobic Digester that collects biogas & makes electricity	

EXEMPTION

Please refer to IDAPA 58.01.01.222.01.c and d for a list of internal combustion engines that are exempt from the Permit to Construct requirements.

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

1. Type of Unit: ☒ New Unit ☐ Unpermitted Existing Unit ☐ Modification to a Unit with Permit #: Date Issued:

2. Use of Engine: ☐ Normal Operation ☐ Emergency ☐ Back-up ☒ Other: Renewable Energy

3. Engine ID Number:	4. Rated Power:	
EP-1	☒ 1573 Brake Horsepower(bhp)	☒ 1138 Kilowatts(kW)
5. Construction Date:	6. Manufacturer:	7. Model:
9/1/08	GE	Jenbacher J 416
8. Date of Modification (if applicable):	9. Serial Number (if available):	10. Control Device (if any):
NA	NA	NA

FUEL DESCRIPTION AND SPECIFICATIONS

11. Fuel Type	☐ Diesel Fuel (#) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☒ Other Fuels (unit:cf/hr)
12. Full Load Consumption Rate				21,129
13. Actual Consumption Rate				17,198
14. Sulfur Content wt%		N/A	N/A	

OPERATING LIMITS & SCHEDULE

15. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):
NA

16. Operating Schedule (hours/day, months/year, etc.):
24 hours a day 365 days a year

Emissions Units - Industrial Engine Information **Form EU1**

PERMIT TO CONSTRUCT APPLICATION

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03/27/07

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IDENTIFICATION

Company Name:	Facility Name:	Facility ID No:
Cargill Environmental Finance	Bettencourt B-6	1
Brief Project Description:	Dairy Anaerobic Digester that collects biogas & makes electricity	

EXEMPTION

Please refer to IDAPA 58.01.01.222.01.c and d for a list of internal combustion engines that are exempt from the Permit to Construct requirements.

ENGINE (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS

1. Type of Unit: ☒ New Unit ☐ Unpermitted Existing Unit
☐ Modification to a Unit with Permit #: Date Issued:

2. Use of Engine: ☐ Normal Operation ☐ Emergency ☐ Back-up ☒ Other: Renewable Energy

3. Engine ID Number:	4. Rated Power:	
EP-2	☒ 1573 Brake Horsepower(bhp)	☒ 1138 Kilowatts(kW)
5. Construction Date:	6. Manufacturer:	7. Model:
9/1/08	GE	Jenbacher J 416
8. Date of Modification (if applicable):	9. Serial Number (if available):	10. Control Device (if any):
NA	NA	NA

FUEL DESCRIPTION AND SPECIFICATIONS

11. Fuel Type	☐ Diesel Fuel (#) (gal/hr)	☐ Gasoline Fuel (gal/hr)	☐ Natural Gas (cf/hr)	☒ Other Fuels (unit:cf/hr)
12. Full Load Consumption Rate				21,129
13. Actual Consumption Rate				17,198
14. Sulfur Content wt%		N/A	N/A	

OPERATING LIMITS & SCHEDULE

15. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):
NA

16. Operating Schedule (hours/day, months/year, etc.):
24 hours a day 365 days a year

DEQ AIR QUALITY PROGRAM
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PERMIT TO CONSTRUCT APPLICATION
Revision 3
4/5/2007

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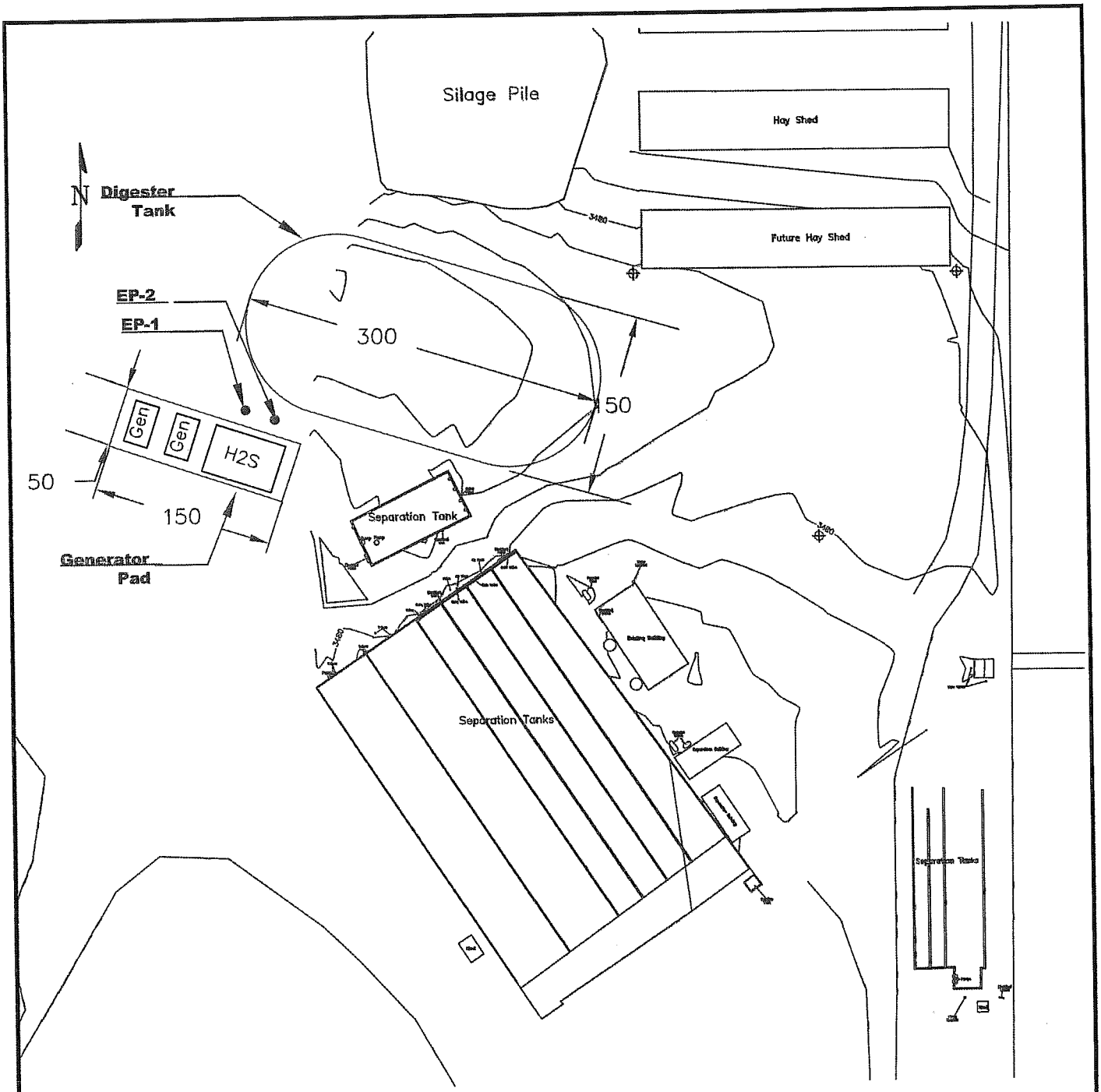
Company Name:	**Cargill Environmental Finance**
Facility Name:	Bettencourt B-6
Facility ID No.:	1
Brief Project Description:	Dairy Anaerobic Digester which captures biogas to produce electricity through gensets.

SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - POINT SOURCES

1.	2.	3.											
		PM_{10}		SO_2		NO_X		CO		VOC		Lead	
Emissions units	**Stack ID**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**	**lb/hr**	**T/yr**
Point Source(s)													
GE Jenbacher 416	EP-1	0.10	0.43	NA	NA	3.82	16.71	10.41	45.57	NA	NA	N/A	N/A
GE Jenbacher 416	EP-2	0.10	0.43	NA	NA	3.82	16.71	10.41	45.57	NA	NA	N/A	N/A
Perennial Energy Flare	EP-3	NA	NA	13.94	61.06	NA	NA	NA	NA	7.00	30.64	N/A	N/A
Note: The flare operates when the engines are bypassed. The emissions presented represent the highest expected emission rates from either the flare or engines.													
Total		0.19	0.86	13.94	61.06	7.64	33.42	20.82	91.14	7.00	30.64		



Facility Drawing Provided by Dioptra Geomatics, July 2008

150 0 150

Scale in Feet

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BOISE, ID

PROJECT NO.	95544
DRAWN:	JULY 2008
DRAWN BY:	CE
CHECKED BY:	BM
FILE NAME:	

BORING AND GEOPHYSICAL LINE LOCATIONS

CARGILL BETTENCOURT B6

3350 S. 2300 E.
JEROME, IDAHO

FIGURE

3

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Please see instructions on page 2 before filling out the form.

Company Name:	Cargill Environmental Finance
Facility Name:	Bettencourt B-6
Facility ID No.:	1
Brief Project Description:	Dairy anaerobic digester which captures biogas to produce electricity through gensets.

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS

		1.		2.	3.	4.		5.
Criteria Pollutants	**Averaging Period**	**Significant Impact Analysis Results (µg/m3)**	**Significant Contribution Level (µg/m3)**	**Full Impact Analysis Results (µg/m3)**	**Background Concentration (µg/m3)**	**Total Ambient Impact (µg/m3)**	**NAAQS (µg/m3)**	**Percent of NAAQS**
PM_{10}	24-hour	5	5	5	73	78	150	52%
	Annual	1	1	1	26	27	50	54%
SO_2	3-hr	128	25	128	34	162	1300	12%
	24-hr	57	5	57	26	83	365	23%
	Annual	11	1	11	8	19	80	24%
NO_2	Annual	31	1	31	17	48	100	48%
CO	1-hr	1,423	2000	1,423	3,600	5,023	10000	50%
	8-hr	996	500	996	2,300	3,296	40000	8%

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Company Name:	Cargill Environmental Finance
Facility Name:	Bettencourt B-6
Facility ID No.:	1
Brief Project Description:	Dairy anaerobic digester which captures biogas to produce electricity through gensets.

POINT SOURCE STACK PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Stack Height (m)**	**Modeled Diameter (m)**	**Stack Exit Temperature (K)**	**Stack Exit Flowrate (acfm)**	**Stack Exit Velocity (m/s)**	**Stack orientation (e.g., horizontal, rain cap)**
Point Source(s)										
2 GE Jenbacher 416s	EP-1,2	741,792	4,727,165	1,280	6.71	0.30	743	2,964	19	vertical
Perennial Energy Flare	EP-3	741,792	4,727,165	1,280	6.10	n/a	n/a	n/a	n/a	vertical
(insert more rows as needed)										

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Company Name:	Cargill Environmental Finance
Facility Name:	Bettencourt B-6
Facility ID No.:	1
Brief Project Description:	Dairy anaerobic digester which captures biogas to produce electricity through gensets.

FUGITIVE SOURCE PARAMETERS

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	**Stack ID**	**UTM Easting (m)**	**UTM Northing (m)**	**Base Elevation (m)**	**Release Height (m)**	**Easterly Length (m)**	**Northerly Length (m)**	**Angle from North (°)**	**Initial Vertical Dimension (m)**	**Initial Horizontal Dimension (m)**
Area Source(s)										
name of the emissions unit1										
name of the emissions unit2										
name of the emissions unit3										
name of the emissions unit4										
name of the emissions unit5										
name of the emissions unit6										
name of the emissions unit7										
name of the emissions unit8										
name of the emissions unit9										
name of the emissions unit10										
Volume Source(s)										
name of the emissions unit11										
name of the emissions unit12										
name of the emissions unit13										
name of the emissions unit14										
name of the emissions unit15										
name of the emissions unit16										
name of the emissions unit17										
name of the emissions unit18										
name of the emissions unit19										
(insert more rows as needed)										

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Company Name:	Cargill Environmental Finance
Facility Name:	Bettencourt B-6
Facility ID No.:	1
Brief Project Description:	Dairy anaerobic digester which captures biogas to produce electricity through gensets.

BUILDING AND STRUCTURE INFORMATION

1.	2.	3.	4.	5.	6.	7.
Building ID Number	**Length (ft)**	**Width (ft)**	**Base Elevation (m)**	**Building Height (m)**	**Number of Tiers**	**Description/Comments**
Existing Building	75.00	45.00	1280.00	5.20	1	Building nearest to the stacks
Building 2 ID						
Building 3 ID						
(insert more rows as needed)						

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IDENTIFICATION		
Company Name: Cargill Environmental Finance	Facility Name: Bettencourt B-6	Facility ID No: 1
Brief Project Description: Dairy Anaerobic Digester which captures biogas to produce electricity through gensets		

APPLICABILITY DETERMINATION		
1. Will this project be subject to 1990 CAA Section 112(g)? (Case-by-Case MACT)	☒ NO	☐ YES* * If YES, applicant must submit an application for a case-by-case MACT determination [IAC 567 22-1(3)"b" (8)]
2. Will this project be subject to a New Source Performance Standard? (40 CFR part 60)	☐ NO	☒ YES* *If YES, please identify sub-part: JJJJ
3. Will this project be subject to a MACT (Maximum Achievable Control Technology) regulation? (40 CFR part 63) THIS ONLY APPLIES IF THE PROJECT EMITS A HAZARDOUS AIR POLLUTANT	☒ NO	☐ YES* *If YES, please identify sub-part: ____
4. Will this project be subject to a NESHAP (National Emission Standards for Hazardous Air Pollutants) regulation? (40 CFR part 61)	☒ NO	☐ YES* *If YES, please identify sub-part: ____
5. Will this project be subject to PSD (Prevention of Significant Deterioration)? (40 CFR section 52.21)	☒ NO	☐ YES
6. Was netting done for this project to avoid PSD?	☒ NO	☐ YES* *If YES, please attach netting calculations

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT